1,145,812

PATENT SPECIFICATION 1,145,812

DRAWINGS ATTACHED.

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COMPLETE SPECIFICATION.

Improvements relating to Remote Controlled Models.

We, MINIMODELS LIMITED, a British Company, of Fulflood Road, Leigh Park, Havant, Hampshire, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to remote controlled models of the kind which run on wheels and are driven by an electric motor.

With such models electromagnetic braking is sometimes provided when the model is to be stopped by short circuiting the motor and causing the wheels to drive the motor in the manner of a dynamo on the overrun. The deceleration resulting from this braking is not as great as would be desirable and it is only effective on those wheels which are normally driven by the motor.

In accordance with the present invention, a model of the kind described is provided with a wheel brake actuated by a weight which is freely movable forwardly and rearwardly relatively to the body of the model; the arrangement being such that when the model is decelerated as a result of a reduction in the power output of the electric motor the momentum of the weight carries it forwards relatively to the body and actuates the brake and when the model accelerates as a result of an increase in the power output of the electric motor the weight moves rearwardly relatively to the body and releases the brake.

The invention is applicable to models in the form of locomotives which run on tracks, but we are particularly interested in its application to model vehicles which may be free running and coupled to a hand controller through a cable, or which are of the kind known as slot racers that are guided by and pick up electric current from a slot in a track.

This simple arrangement enables brakes to be applied to any or all of the wheels of the model in combination with, or instead of, the above mentioned electro-magnetic braking by the motor, the weight actuated brakes being applied and released automatically when the model is decelerated or accelerated by the electric motor. For example, in the case of a model vehicle, the electric motor may drive the rear or front wheels and the weight actuated brakes may act on either the front or rear wheels.

Most simply the brakes are friction brakes and include a pivoted lever one end of which carries a friction shoe which moves into and out of engagement with the corresponding wheel as the lever pivots to and fro upon movement of the weight forwards and backwards relatively to the body. In order to provide the maximum moment of force urging the friction shoe into engagement with the wheel, the lever is preferably pivoted at one side of the vehicle adjacent to the wheel to which that brake may be applied and extends across the body to the other side of the vehicle where it carries the weight.

One example of a slot racing car constructed in accordance with the invention is illustrated in the accompanying drawings in which:—

Figure 1 is an exploded perspective view of the car; and,

Figure 2 is plan of the car with the body removed.

In Figure 1, the car is shown having a chassis 4 with a raised portion 5 at the rear which serves to hold a body 7 on the chassis. Two flanges 8 extending upwards from the chassis 4 support a rear axle 9

in nylon bearings 10. A rear wheel 11 is held firmly against a shoulder 12 on each end of the rear axle by a nut 13 which co-operates with a screw threaded end portion 14 of the axle. A crown wheel 15 is secured to the rear axle 9 between the two flanges 8 and is driven by a pinion 16. The pinion 16 is driven by an electric motor 17 which is held between front and rear forks 18 and 19 by a spring clip 20.

The power supply to the motor 17 is through two wires, not shown leading via a terminal block 21 from shoes also not shown, one on each side of a guide blade 22 at the front of the car. The car is for use with a slot racing track of a type which is well known and which has a continuous slot to accommodate the guide blade 22 and, on each side of the slot a conductor from which the shoes on each side of the guide blade draw an electric current to supply the motor 17. The guide blade which is pivotally mounted at 23 steers the car, causing it to follow the slot in the track.

The car has a braking system comprising a yoke 24, secured to the chassis 4 by two clips 25, and two levers 26 and 27 freely pivoted on the yoke at 28 and 29 respectively. The lever 27 has a step at 30 so that it clears the lever 26. One end of each of the levers carries a friction shoe 31 and the other end a weight 32. Each of the levers 26 and 27 is bent through a right angle between the pivot 28 or 29 and the weight 32 so that, as the lever rocks about its pivot from the position shown in solid lines in Figure 2 to that shown in broken lines, the weight moves through an arc but essentially forwards, whereas the friction shoe moves outwards to bear against one of two front wheels 33 which are fixed by nuts 34 to a front axle 35.

When it is required to reduce the speed of the car in use, the supply of power to the conductors in the track is cut off and the conductors are electrically connected together. This short circuits the motor 17 which then acts as a dynamo and exerts a braking action on the rear wheels 11. The resulting deceleration of the car causes the weights 32 to be carried forward relatively to the car by their momentum causing the levers 26 and 27 to rock about their pivots 28 and 29 to the position shown in broken lines in Figure 2. The friction shoes are thus moved outwards to bear against the front wheels 33 and enhance the relatively feeble braking effect of the short circuited motor 17. When the speed of the car is to be increased again, the power is restored to the track conductors and hence to the motor and the car begins to accelerate. The inertia of the weights 32 then causes the levers 26 and 27 to rock back to the position shown in solid lines in Figure 2, moving the friction shoes 31 inwards away from the wheels 33.

In some cases it is unnecessary to short circuit the motor in order to bring the braking system into operation, sufficient deceleration to cause the weights 32 to move forwards being obtainable simply be reducing the power supply to the motor 17.

WHAT WE CLAIM IS:—

1. A model of the kind described which is provided with a wheel brake actuated by a weight which is freely movable forwardly and rearwardly relatively to the body of the model; the arrangement being such that when the model is decelerated as a result of a reduction in the power output of the electric motor the momentum of the weight carries it forwards relatively to the body and actuates the brake and when the model accelerates as a result of an increase in the power output of the electric motor the weight moves rearwardly relatively to the body and releases the brake.

2. A model in accordance with claim 1, in which the brake is a friction brake and includes a pivoted lever one end of which carries a friction shoe which moves into and out of engagement with the corresponding wheel as the lever pivots to and fro upon movement of the weight forwards and backwards relatively to the body.

3. A model in accordance with claim 2, in which the lever is pivoted at one side of the model adjacent to the wheel to which that brake may be applied and extends across the body to the other side of the model where it carries the weight.

4. A model in accordance with any one of the preceding claims suitable for use on a track which has a slot to guide the model and conductors which, in co-operation with shoes on the model, can supply an electric current to the motor.

5. A model in accordance with any one of the preceding claims, in which two wheel brakes act one on each of two front wheels.

6. A model in accordance with claim 1, substatnially as described with reference to the accompanying drawings.

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1 SHEET *This drawing is a reproduction of the Original on a reduced scale*

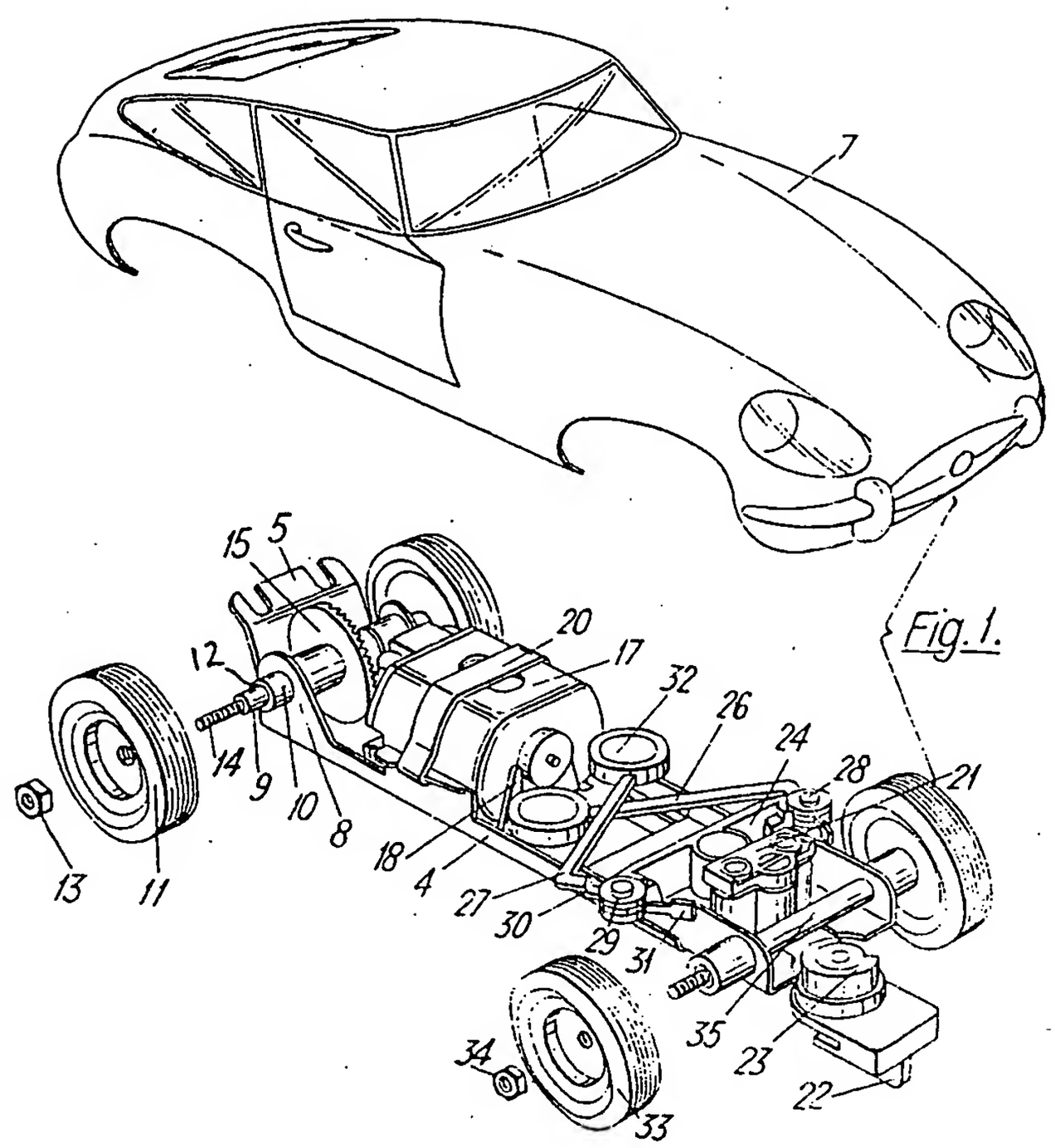

Fig. 1.

Fig. 2.